Session 3C:Watershed and Estuarine Assessment and Planning

Questions & Answers

Q: My question for Richard Gersib is: you mentioned the movement of heat as one of the five processes, I guess I just don't understand that and was wondering if you could expand on what exactly is the movement of heat within a watershed?

Gersib: The process of delivering a routing of heat, let's start with this, the problem: I think 30% of the water quality violations in the state of Washington relate to violations in temperature standards. And so the delivery and routing of heat relates to temperature. There are three factors that drive the delivery of heat into a system: canopy, which is the one that almost everybody works with, but groundwater inputs as well as stream depth are factors. And so the concept of looking at those three…Simpson did an excellent TMDL, a processed-based TMDL, where the stratified the landscape into groundwater discharge streams, groundwater dominated stream for temperature shade driven for temperature and then sediment driven. Because an increase in sediment input results in shallower broader streams, which results in warmer water. The concept of assessing the delivery and routing of water looks at those three elements and tries to assess the areas or human land uses that have altered those three.

Q: This question is for John but maybe Richard has a comment about this as well. I was wondering, in terms of what scale the model could be used other than the large scale that you did use it at, if you thought it was flexible to be used at smaller scales?

A: What we have tried to do in the Snohomish estuary was establish, I presume you are asking the scale of the assessment units. We tried to make them inclusive of fairly large tracts of continuous habitat. If you had an area where the habitat was much more fragmented, for example, down in the industrialized part of the estuary, we had much smaller assessment units because the habitat had been fragmented by breaks such as bulkheading or riprap?? But it can be applied on various scales, we talked a little bit in our committee about one of the problems in using the model on that scale for assessing impact is that if you have a really large assessment unit and you've got a project that's only affecting a small piece of it, then the model may not be sensitive enough to reflect the impact of that development. So in that case we talked about sort of subdividing the assessment unit so that the model could be more sensitive. It can be used on whatever scale seems most appropriate.

Q: This is for the panel as a whole and it kind of tags on the previous question. From a watershed basin perspective, if you will, and from a salmon recovery perspective, what do you think it would take to do the equivalent Puget Sound-wide for the nearshore from a function standpoint?

A: Just to do it for the WRIA 8 and 9 nearshore was a fairly monumental task. What will it take? I think there are a couple of people stepping up to plate to get this into place and I think it's fairly important first step. We need to assess what is there in the nearshore, what it's functions are, and before we begin to begin this prioritization of some of the restoration areas, I know People For Puget Sound and the various marine resource committees have proposed some of this work. If you are interested in this question, I'd like to encourage you to attend Jacques White's session, because that's exactly what he's going to talk about: What's step 1? What's step 2? There are some interim measures that we can take off from this kind of work that's been done in WRIA 8 and 9 and extend it around Puget Sound, but there's also much more detail, like data gap filling that's going to take years and years, so Jacques will outline a phased approach to getting to that issue.

Q: As Greg so aptly pointed out, we're collecting all this information and realizing the data gaps, do you see or has there been any follow-up projects related to public outreach and try to inform the public on what's going on?

A: I might just say that because the City of Everett is incorporating the SEWIP Salmon overlay as part of the revised Shoreline Management master program, they are involved right now in a public outreach educational process, not specific to this plan but it's because the plan is incorporated into the broader process that it's getting a public hearing.

Q: I was actually going to ask if Jim Brennan, or Laura, do you guys have any insight as to how this information may be conveyed to the public in King County? And what's the state of the nearshore report is finalized?

A: The report will be available to the public. It is in the technical review stage right now and it will be made available on the King County website.

Q: I have a question for Richard. How did you estimate future land cover in your watershed assessment? Did you use a model, and if so, what model was it?

A: No, we actually did something very simple. We took the GMA plans, the buildout plans for each urban growth area within Snohomish basin and they had all the different land uses outlined where they want the commercial, residential, urban, urban centers and we developed it from those GMA buildout scenarios.

Q: So the future was defined as buildout according the Growth Management Act?

A: Yes.

Q: I'd like to ask three if that's okay. The first questions is directed to John. If I remember right, the original SEWIP proposal or plan had a recommendation that mitigation should not occur upstream within the basin and up the salinity gradient because of the extreme limiting factors that were occurring due to land use in the lower estuary. And the proposal you just showed us had some mitigation recommendations occurring, one or two cells or blocks upstream and I am curious about if that's a difference? The next question: In the King County study, was there a look at spatially explicit review of upland land use, not just armoring, but deforestation and whether or not there was a road there, a railroad track, a house, what kind of vegetation present, and if not, that seems to be a gap in our data, because the state agencies that collect nearshore don't have jurisdiction over the upland properties and therefore don't look there, but there are probably some affects that occur accrue to the shoreline due to whether there is a septic tank there, whether there's a manicured lawn that's been treated with chemicals, etc? And then the last question: The Skagit System Cooperative Tom mentioned did a really elegant study of fish use in the estuary to try to identify in the Skagit estuary whether or not the habitats there were saturated or provided extra habitat, could accommodate more fish coming out of the rivers, and I'm curious what it would take to do a similar study of the Puget Sound shoreline? In other words, do a time budget and fish density at different tidal levels, at high tide, look at the fish utilization of the upper shoreline, and at low tide for example, look at fish utilization of seagrass beds or submerged aquatic vegetation. And then linking that, there was another study that was done recently by Kurt Fresh and, like Washington, that indicated that the salmon were at least in the lake were heavily averse to going near docks, they didn't even like homes that were adjacent to the water if it was against a bulkhead or a seawall, and I'm just wondering if we could get that kind of data and if so, just for King County, how much would that cost?

A: The original SEWIP that Jacques mentioned is not that different from what is being recommended as a mitigation policy in the current version, and that is that there is a premium placed on restoration of habitats within what in essence some people refer to as the bottleneck or the area of the estuary where there is the predominate mixing of tidal saline waters and fresh waters. They are two ecological management units within in that zone and those are distinguished on the basis of historic breaks between the tidal emergent marsh and its tidal scrub shrub, if that's the right terminology. We did redraw the ecological management unit boundaries based on work by Andy Haus and Brian Collins in the historic reconstruction of the estuary so that we are trying to emphasize restoration in those perceived to be critical areas where that transition zone exists. Question #2 to rephrase it—did the state of the nearshore report for WRIAs 8-9 include any

spatial explicit land use in the watershed? No, because the reason the State of the Nearshore report was written because there had been a lot of resources had been allocated to most of the work in assessing what had been going on in the watersheds and many people recognized that the nearshore had been pretty much left out of the process and I think this assessment that was done essentially is something that was added on at the end and more than anything, I think it's a first brush of compiling the information that exists and trying to understand where the bid data gaps are, so that will be something we work towards in the future. Third question—I really don't have an answer to the question of the cost obviously, but a couple of things that strike me as just as observational in the time I've spent along the shorelines of Puget Sound and also in looking at some of the data, and that is that it doesn't seem that fish—meaning juvenile salmonids—are particularly dense or concentrated in any of those areas. They seem to be fairly widely dispersed, there may be others who would dispute that. I'm thinking of the catch data that was shown for the King County nearshore area and they had an average of three Chinook per set, which compared to catch rates in the estuary and upstream, is really quite low. I think you're right that there aren't good data sets to address that question, but my impression is that that may not be a capacity limited part of the system at this point, but you're right, that we certainly need to validate that assumption.

Q: How applicable do you feel your models were different watersheds that might not have had the extensive data collection that you've done in each watershed? So for restoration planners, how would you best suggest they use the data you collected and the models you've created if they don't have the resources to do the same kind of extensive mapping that you have done?

A: Our model was designed using only existing data sets that were publicly available for all of Puget Sound so the whole idea was to create something that could be reapplied to any rural river delta in Puget Sound. Obviously, the urban deltas have some different considerations because of the extensive industrial use so I don't think our set of criteria would work very well, but the general system could be modified pretty easily. The tidal habitat model that we put together we intended and hoped that it would be applicable in any tidal habitat throughout Puget Sound, both in the nearshore and in estuarine situations. The data needs to apply it are really pretty limited and that was by intent. We essentially need a good set of aerial photographs and a good low tide survey that goes fairly quickly. We actually did the entire Snohomish estuary in four days of field time, so it is really quite efficient to get that kind of data, and then it's helpful to have a GIS system to put the data on although not essential. It could be done on a less sophisticated mapping base.

Q: In the three of you that did site-specific projects, just give us a ballpark dollar cost for the assessments that you did?

A: The entire SEWIP Process, which involved a lot of time and developing the model and in debating various mitigation policies that were and weren't appropriate, I think that we spent about $150K, of that, $12K was for actually applying the model in the field and perhaps $15K was for doing the mapping and the various analyses that were done subsequently. For the City of Mukilteo, I think maybe five or six miles of shoreline we did that for $1,000 with the model in existence.

Q: I want to get back to the question about efficiency and cost and how can we do this, and how do we do this when we don't have a lot of money.

A: One of the things that we have learned at Ecology in doing the wetland restoration work and the river basin characterization work, is we don't have enough money to do everything we that we want. Unfortunately, in the past, we've done things in a very opportunistic way. There's an opportunity here, we grab it. There's money here, we just jump at these opportunities. I would suggest that if we are really going to address our salmon issues, our water issues, both water quality and water quantity, peak flows and base flows, we have to start looking at landscapes and ecosystem health and then use that as the tool to help to help you focus where you spend your limited funds. And until we start looking at systems, it's very interesting, I was just thinking, and with some of the SMA work we've been doing with the rule, it's becoming very clear, we thought we were comprehensive in doing the Snohomish and here's Greg doing the nearshore, exactly the flip side. We need to be looking at systems as systems, we can break it apart if we need to because of the specialties involved but we have to put things together and develop a recovery

strategy that starts making sense. To me, that's the only way we can start really putting money where it really needs to be put first.

Part of the problem the way salmon recovery is set up in the state, it's awatershed-by-watershed, ground-up approach, and watershed planning councils tend to stop at the river mouths and tend to forget about the shorelines, the deep water habitats and all the other things that connect the greater ecosystem.

I want to follow up on an earlier comment that John made about understanding production limitations in the nearshore. I think the reason so many data gaps exist within the nearshore because often times, it's much more difficult to do these research projects because they represent an open system, in many cases, there are many fewer data gaps in the freshwater systems because they are much more of closed system. They are very hard questions, you can't go out there in one year and do a study and understand the effect of over-water structures on predation rates on smolts or understand what the production capacity of the whole entire nearshore and Puget Sound are going to be, you really have to make an investment in this as a research direction for the future.

It's a big difference between trying to develop a plan like the SEWIP salmon overlay and the Skagit estuarine assessment because one has to consider mitigation which is a very complex topic and the other is really just trying to target from an ecological perspective and a land use perspective, where are high quality areas for conservation actions, and so there's a much more simpler focus and therefore, the costs for that kind of effort is much lower. I wanted to respond to the comment about the shoreline and the small numbers and the potential to limited factors of fish there, perhaps we have not reached the level of limitation that we have in some of our estuaries, even our rural estuaries which have been heavily impacted by diking. If you think there's only 20% of the original estuarine habitat remaining, it's hard to think of that as a limiting factor. Where else in the watershed do we have such a rate of habitat loss or such an extent of habitat loss? The nearshore though, if you look at where the damages are, we have only about 20% of unaltered nearshore habitat between Tacoma and Everett, so that is at the same level of alteration ,and I think there are specific areas along the shoreline where we may have a limiting factor. If our target is 20 million Chinook smolts exiting the rivers and entering the Puget Sound, and you start to do the math, particularly in central Puget Sound, there could be some limiting factors that we see on the nearshore habitat, particularly in places like Elliott Bay or where the train track goes. I wouldn't discount that concept entirely.

Be a little careful in how you are using the percent-loss and the percent-altered figure. When you think about percent loss in the deltas and estuaries, we usually are talking about diked eliminated out of the system, whereas, the percent alteration of nearshore shorelines is often only in the upper intertidal and the lower intertidal continues to provide some function.